

## **Permanent observatory on science communication through the media**

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This article presents the results of a study carried out in Italy by the Permanent Observatory on science communication through the media.<sup>1</sup> The aim of this research project coordinated by the staff of the Master's Degree in Science Communication, ISAS, Trieste, in collaboration with Ilesis S.r.l., Rome, is to monitor and analyse systematically the amount of scientific information on TV<sup>2</sup> and in the press.

### **Methodology**

The survey covered a 182-day period, from November, 15<sup>th</sup> 2001 to May 15<sup>th</sup> 2002. Monitoring was carried out on:

- five TV news broadcasts (*Tg1* 8.00 PM, *Tg2* 8.30 PM, *Tg3* 7.00 PM, *Tg4* 7.00 PM, *Tg5* 8.00 PM);
- eighteen TV educational shows (*Passaggio a Nord-Ovest*, *Tuttobenessere*, *Curare l'anima e il corpo*, *Medicina 33*, *Tg2 Salute*, *Geo & Geo*, *Cose dell'altro Geo*, *Ambiente Italia*, *Alle falde del Kilimangiaro*, *Elisir*, *Tg3 Leonardo*, *La macchina del tempo*, *I viaggi della macchina del tempo*, *Medici*, *Vivere meglio*, *Non solo medicina*, *Sfera*, *Oasi*);

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<sup>1</sup> *Osservatorio permanente sulla comunicazione scientifica attraverso i media*, edited by ISAS/ILEGIS, forthcoming publication.

<sup>2</sup> Data were collected in collaboration with *Centro d'ascolto dell'informazione radiotelevisiva*, Rome.

- five newspapers (*Corriere della Sera, La Repubblica, La Stampa, Il Sole 24 Ore, Il Messaggero*);
- four newspaper magazines (*Corriere Scienza, Tutto Scienze e Tecnologia, Domenica, alfa*);
- two weekly magazines (*Panorama, L'Espresso*).

Newspapers and TV news broadcasts were chosen according to their representativeness: All five national TV news broadcasts enjoy a high share of viewing (they achieve 90% of the total evening audience share).<sup>3</sup> Newspapers were chosen according to their circulation (they achieve 50% of total sales, including sport newspapers).<sup>4</sup> TV programs and newspaper magazines were selected according to subjective criteria of significance.

A parameter of “Science Communication” was defined and then introduced within this research context. The monitoring activity took into consideration only articles, information and reports concerning the following fields:<sup>5</sup>

- Science communication in its strict sense (popularisation of principles, innovations or science applications, information on present medical and scientific issues);
- useful information (issues of wide concern, such as how to avoid diseases or to improve one’s health).

The study disregarded the texts in which the scientific topic was only marginal, such as in the case of health policies or government measures. Indeed, this choice is rather ambiguous but, as stated by Fabrizio Tonello<sup>6</sup>, this ambiguity highlights a significant aspect in present science communication.

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<sup>3</sup> Data provided by *Auditel*, the Italian Audience Research Board, on average audience in March 2001. For further details, see Fabrizio Tonello, *Introduzione ai dati* of the above-mentioned *Osservatorio permanente sulla comunicazione scientifica attraverso i media*.

<sup>4</sup> According to data provided by *Prima Comunicazione*, April 2002. For details, see again Fabrizio Tonello, *Introduzione ai dati*.

<sup>5</sup> Field categorisation has been taken from the above-mentioned book of Fabrizio Tonello, *Introduzione ai dati*.

<sup>6</sup> Fabrizio Tonello, *Introduzione ai dati*.

After collection, data were divided into the following categories:

<b>Biomedicine</b>	clinical medicine (for example surgery, infarction, Aids, etc.), food and health, pharmacology, psychology/psychiatry, neurosciences, <i>medical</i> biology (eg. stem cells), bioethics.
<b>Environment</b>	weather, earth sciences (geology, volcanic eruptions, earthquakes...) and pollution
<b>Life sciences</b>	<i>non-medical</i> biology (eg. GMO in agriculture and breeding), evolutionary biology (dinosaurs, fossils), ethology, zoology, botany.
<b>Culture and politics of science</b>	philosophy, history, culture and politics of science (research funding, institutional events, Science Centre openings)
<b>Hard sciences</b>	physics, chemistry, astronomy, cosmology, mathematics
<b>Technology</b>	<i>highly</i> advanced technology (eg. artificial intelligence)

This study was based on the percentage of “useful pages” occupied by scientific articles in newspapers and magazines, where the expression “useful pages” means total available space in a publication, excluding pages for advertising. As for TV news, the study looked into the percentage of time spent on each piece of scientific news within a single TV news broadcast; whereas, regarding scientific information in general TV programs, the study was concerned with the percentage of time on the 24 hour broadcasting schedule.

The monthly subdivision, for brevity’s sake, was carried out as follows: first month: from 15/11/2001 to 15/12/2001; second month: from 16/12/2001 to 15/01/2002; third month: from 16/01/2002 to 15/02/2002; fourth month: from 16/02/2002 to 15/03/2002; fifth month: from 16/03/2002 to 15/04/2002; sixth month: from 16/04/2002 to 15/05/2002.

## General results

The first results of the 182-day monitoring show a considerable presence of scientific information in the media:

- 490 reports in the five TV news broadcasts, with a daily average of a half piece of news per channel, covering 3.5% of total time;
- 2273 reports in TV programs, with a daily average of 2.5 pieces of news, covering 1.7% of the total TV broadcasting schedule (this is a partial figure since the sample cannot be considered as being representative of the whole broadcasting schedule);
- 2430 articles (news, comments) in the five newspapers, with a daily average of 2.7 each, covering 1.6% of the useful pages. There were also 939 articles in newspaper magazines;
- 954 articles in the two magazines (the study was based on 25 issues for each magazine), with an average of 19 articles per issue, covering 11.3% of the useful pages.

### **Science in the TV news**

A more careful analysis of these study results also underscored that the presence of scientific information in the TV news was very irregular (**Chart 1**). The 3.5% average over the 182 days was the result of 60 days of total absence, 27 days of high frequency (from 7 to 16 pieces of news in the five TV news channels, covering from 10% to 16% of total running time); in the remaining days this presence fluctuated between 1% and 6%. This irregular trend was quite predictable since the number of reports in each TV broadcast was rather small. It is also worth mentioning that the peaks correspond to the announcement of the alleged human cloning at Advanced Cell Technology, to the renewed environmental risks and to the suspension of the marketing authorization for certain drugs.

Regarding the subject of the news, according to the above-mentioned field categorisation (**Chart 2**), biomedicine prevailed, covering 64% of total time devoted to scientific topics in the TV news. Environmental topics accounted for 28% whereas the presence of other subjects was negligible.

Within the field<sup>7</sup> of Biomedicine (**Chart 3**) clinical medicine had a strong impact (39% of the whole biomedical field), followed by bioethics (19%) and health (15%) whereas applied biology and pharmacology, although responsible for some considerable peaks, were still of secondary importance.

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<sup>7</sup> For the field categorisation see Fabrizio Tonello's previously mentioned book.

The monthly trend in **Table 1** showed an underlying presence close to 2%, with a strong increase in the third and fourth month (from mid January to mid March 2002). The visible increase in biomedical and environmental topics during the third month mirrored January's smog alert and the renewed attention to "mad cow" disease after a Sicilian girl turned out to be infected with the human form of BSE. The trend in the following month showed a decreasing interest in "mad cow" disease and reporting on some sensational and popular clinical cases, both positive and negative, such as the story of the woman who gave birth to her son after she underwent heart transplantation and of another woman who died after some liposuction surgery.

The comparison between the different TV channels showed that Tg3 had the smallest percentage of scientific news (2.2% of total time, on average), especially because it tends to neglect the biomedical field. On the contrary, Tg1 showed a percentage of science information (5% of total time, on average) higher than the others (3-4%), but all had a very similar sequence of topics.

Regarding the position of scientific news in the TV news, in most cases it occupied the second half of the broadcast (from the eleventh report onwards) but 17 times it ranked first. January's smog alert was placed in the middle of the list.

**Table 1.** *Monthly percentage of scientific information in the TV news according to various categories. Percentage refers to time spent on each single topic on the total running time of each broadcast.*

Category	First month	Second month	Third month	Fourth month	Fifth month	Sixth month	Average
<b>Biomedicine</b>	1.7%	0.8%	3.2%	4.3%	1.9%	1.5%	<b>2.2%</b>
<b>Environment</b>	0.0%	1.1%	3.4%	0.6%	0.4%	0.2%	<b>1.0%</b>
<b>Life sciences</b>	0.0%	0.1%	0.1%	0.2%	0.3%	0.1%	<b>0.1%</b>
<b>Culture and politics of science</b>	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	<b>0.0%</b>
<b>Hard sciences</b>	0.0%	0.1%	0.0%	0.2%	0.0%	0.1%	<b>0.1%</b>
<b>Technology</b>	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	<b>0.1%</b>
<b>TOTAL</b>	<b>1.8%</b>	<b>2.1%</b>	<b>6.9%</b>	<b>5.4%</b>	<b>2.7%</b>	<b>1.8%</b>	<b>3.5%</b>
<b>Number of reports</b>	42	45	173	92	62	76	490

Chart 1

### Science in the TV news 15 November 2001 - 15 May 2002

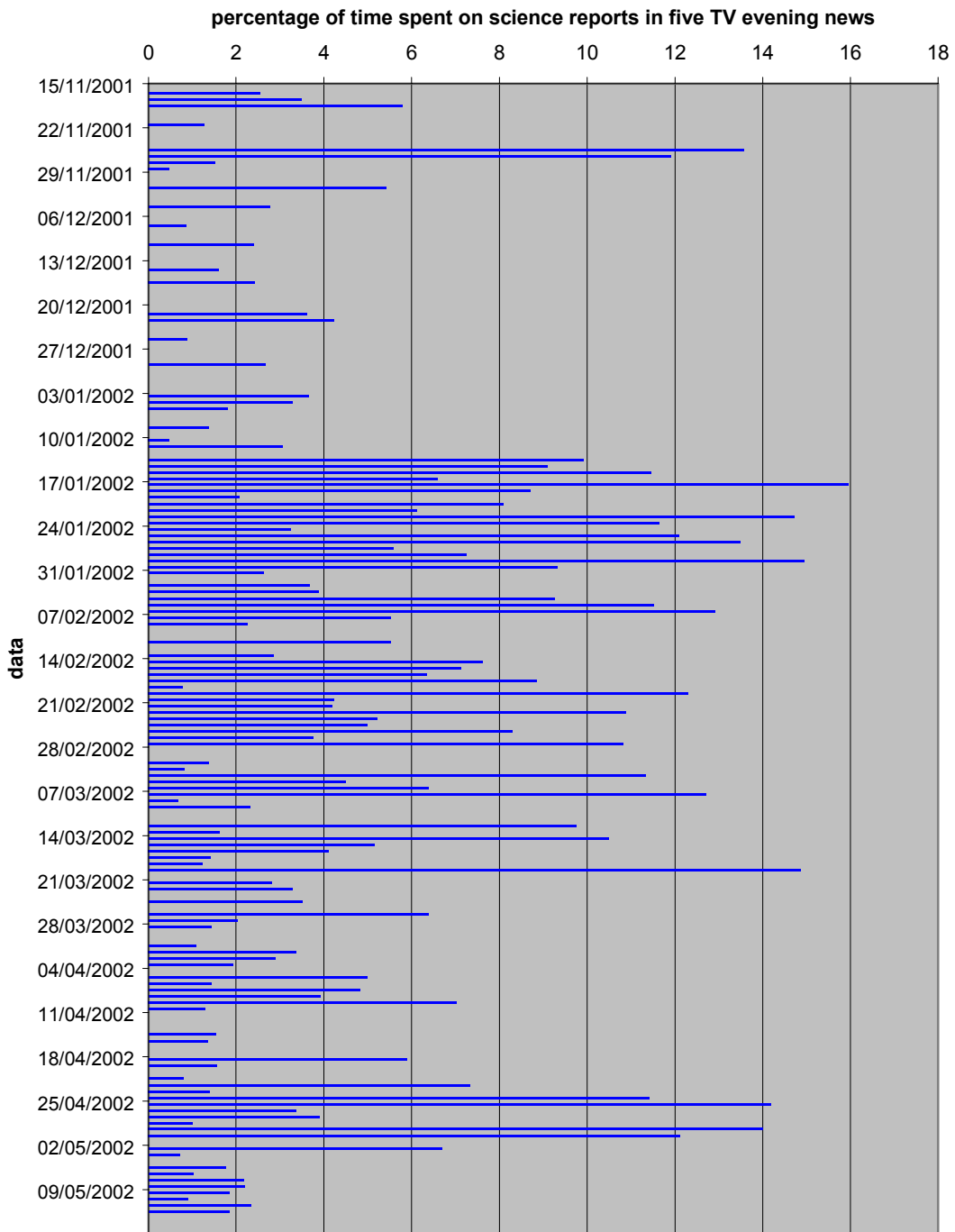


Chart 2

**Science in the TV news  
Distribution of categories  
15 November 2001 - 15 May 2002**

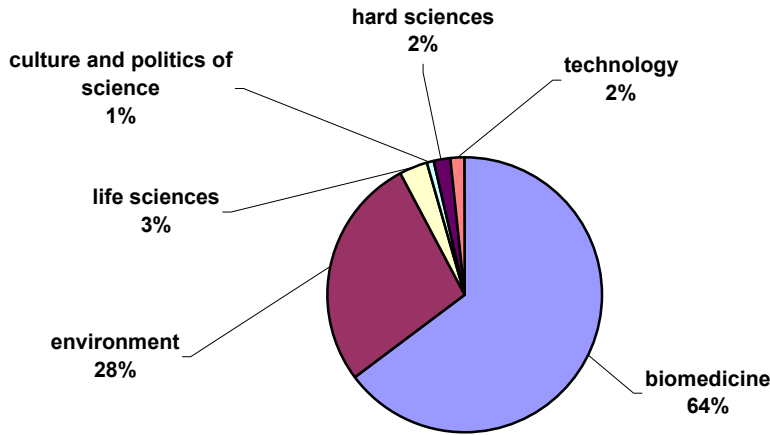
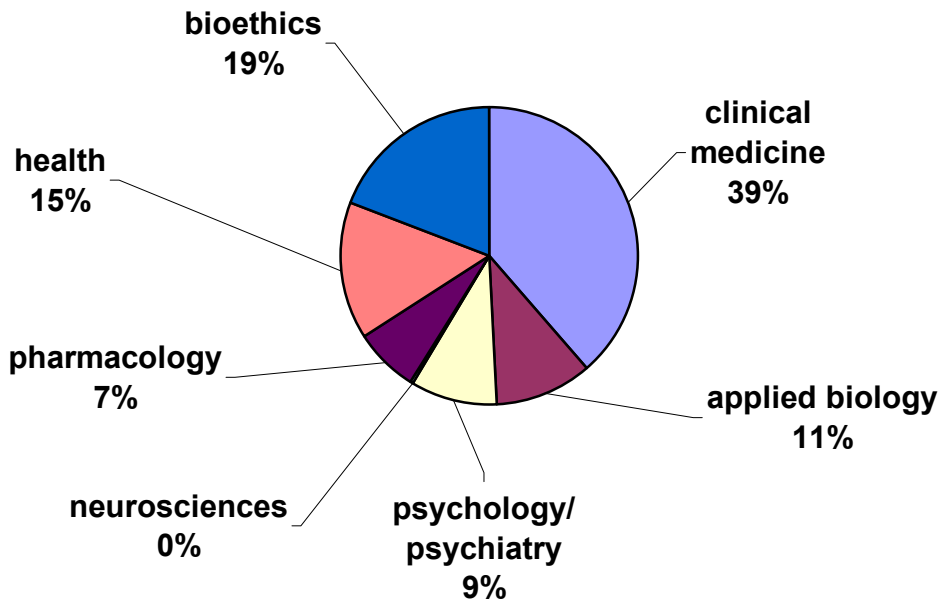


Chart 3

**Science in the TV news  
Distribution of biomedical subcategories  
15 November 2001 - 15 May 2002**



## Science in the press

From a closer look at the results concerning the press, excluding the magazines it emerged that the presence of scientific information is quite constant (**Table 4**) and that an average of 1.6% of the useful pages mirrors the norm: on 170 days out of 182 the pages assigned to scientific topics fluctuated between 0% (seldom) and 4%, the remaining days were characterised by some peaks that, in any case, never exceeded 7%.

The subdivision of scientific news according to the topic highlighted (**Chart 5**) the prevalence of Biomedicine which accounted for 55% of total pages on science in newspapers. From the comparison between TV news and newspapers it emerged that a slightly smaller number of pages is assigned in newspapers to environmental issues (17%); other categories appeared such as the culture and politics of science (12%), followed by the so-called hard sciences (7%), life sciences (5%) and technology (4%).

The study of the subcategories<sup>8</sup> of Biomedicine (**Chart 6**) revealed that *medical biology* and *clinical medicine* reached almost the same percentage (respectively 29% and 27% of the whole category), followed by *pharmacology* (14%), *bioethics* (13%), *psychology/psychiatry* (9%) and *health* (7%). Priorities changed as opposed to TV news and particularly it is worth highlighting the presence of *medical biology*.

The monthly trend of each category (**Table 2**) was quite regular, except for an unexpected decrease in biomedicine during the second month and for an increase in environment during the January smog alert (third month).

Moreover, in 74% of total cases, science articles in newspapers were placed after the eleventh page. In 14% of cases they occupied the first three pages whereas, from page four to page ten, environmental topics dominated.

From comparison between the different newspapers there emerged the expected anomaly of *Sole 24 Ore* where only 0.6% of the useful pages were assigned to scientific topics as opposed to 1.6% in *Corriere della Sera* and *Messaggero*, 1.9% in *Stampa* and 2.2% in *Repubblica*. Each newspaper has its own internal subdivision into topics which is very similar to the average one, with the exception of *Sole 24 Ore* where a higher number of pages is assigned to the culture and politics of science (35% of the total amount of science news in the newspaper) and where articles concerning the environment, biomedicine and technology are more frequent (29%, 25% and 8% respectively). The same differences emerged in both case studies.<sup>9</sup> For example news on

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<sup>8</sup> For the field categorisation see Fabrizio Tonello's previously mentioned book.

<sup>9</sup> The project of the *Osservatorio permanente* included two case studies, respectively on weather dynamics and on drugs.



weather dynamics was very frequent (312 articles out of 2430) and linked to specific peaks (**Chart 7**). They accounted for 10-12% of *Corriere della Sera*, *Stampa* and *Repubblica*; whereas in *Messaggero* they only reached 5%; this is possibly due to local climate changes and the increase in aerosols that affected mainly the North of Italy (in Rome where the *Messaggero* is published this phenomenon was negligible). *Sole 24 Ore*, on the contrary, assigned 16% of its science articles to this topic, which all have a specific approach, very close to Latour’s “hybrid article”.<sup>10</sup>

**Table 2.** Monthly percentage of scientific information in the press according to various categories. Percentage refers to space (including headlines and pictures) assigned to each single topic on the total of the useful pages.

Category	First month	Second month	Third month	Fourth month	Fifth month	Sixth month	Average
<b>Biomedicine</b>	1.0 %	0.4 %	1.1 %	1.0 %	1.0 %	0.7 %	<b>0.9 %</b>
<b>Environment</b>	0.1 %	0.3 %	0.5 %	0.1 %	0.2 %	0.1 %	<b>0.3 %</b>
<b>Life sciences</b>	0.0 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	<b>0.1 %</b>
<b>Culture and politics of science</b>	0.2 %	0.2 %	0.2 %	0.2 %	0.1 %	0.2%	<b>0.2%</b>
<b>Hard sciences</b>	0.1 %	0.1 %	0.1 %	0.2 %	0.1 %	0.2 %	<b>0.1 %</b>
<b>Technology</b>	0.0 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	<b>0.1 %</b>
<b>TOTAL</b>	<b>1.5 %</b>	<b>1.3 %</b>	<b>2.1 %</b>	<b>1.7%</b>	<b>1.6 %</b>	<b>1.4 %</b>	<b>1.6 %</b>
<b>Number of reports</b>	409	280	504	422	454	361	<b>2430</b>

<sup>10</sup> Bruno Latour, *La scienza in azione. Introduzione alla sociologia della scienza*, Torino, edizioni Comunità, 1998.

Chart 4

### Science in the newspapers 15 November 2001 - 15 May 2002

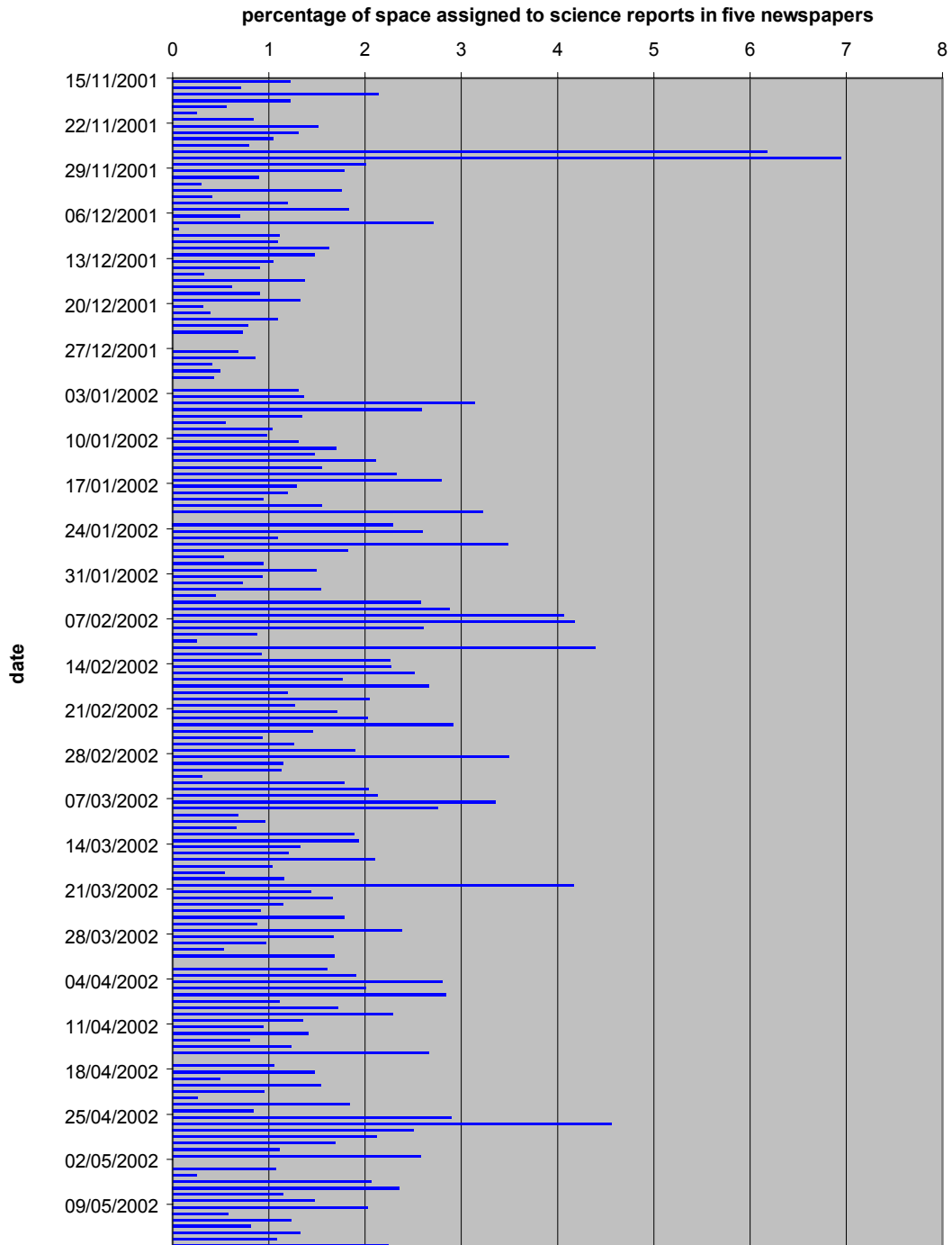


Chart 5

**Science in the newspapers**  
**Distribution of categories**  
**15 November 2001 - 15 May 2002**

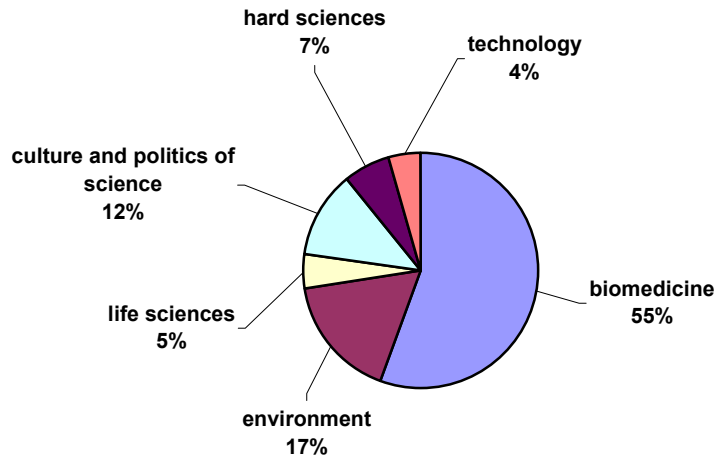


Chart 6

**Science in the newspapers**  
**Distribution of biomedical subcategories**  
**15 November 2001 - 15 May 2002**

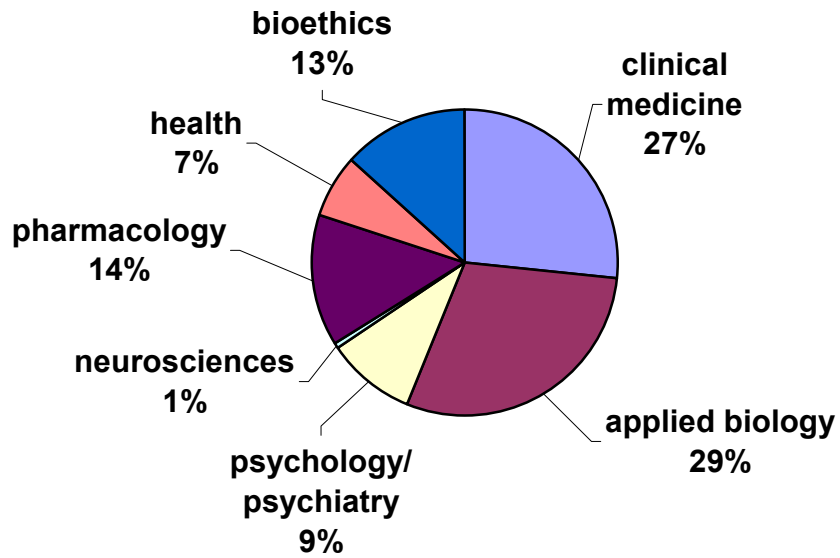
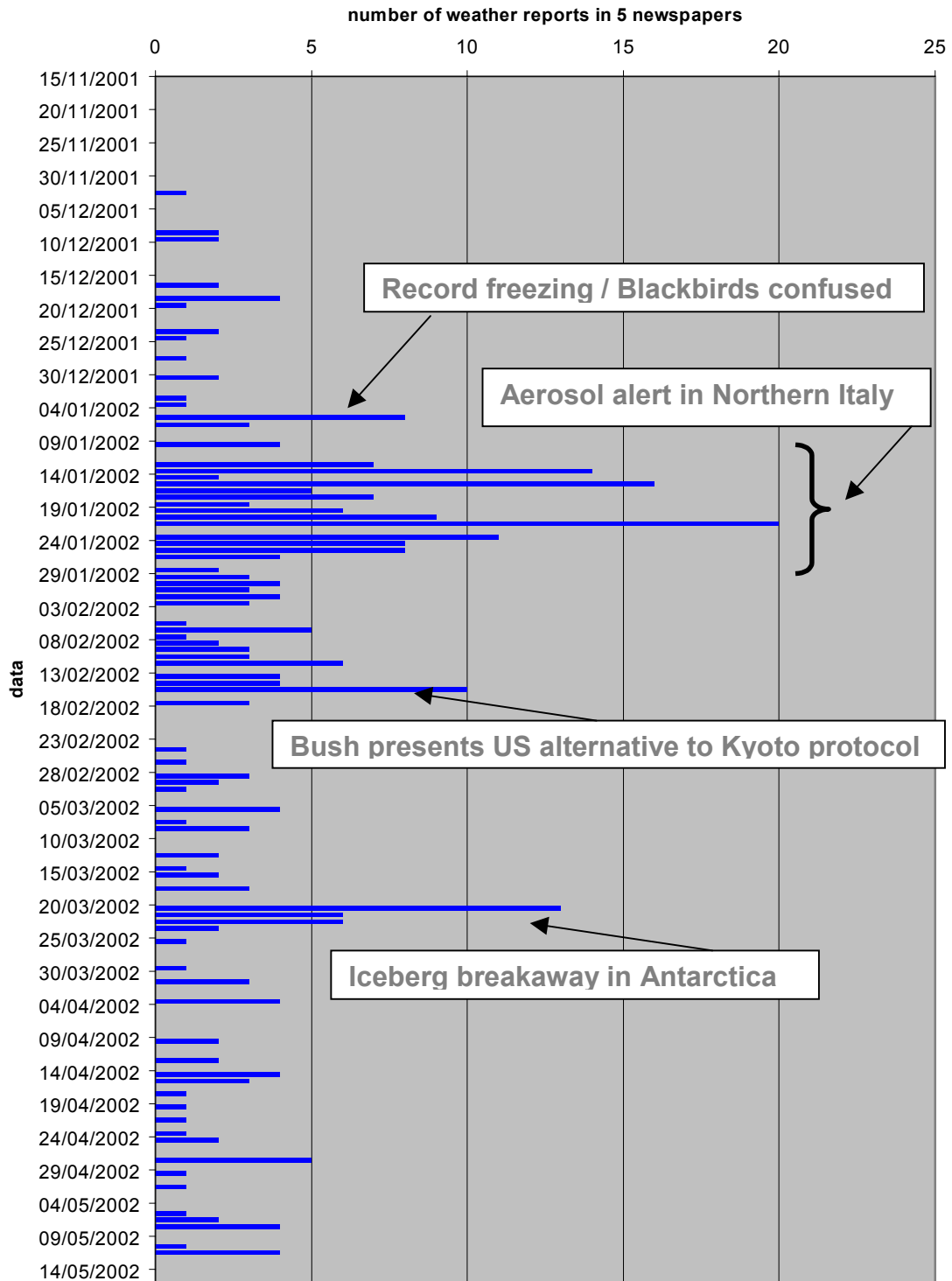


Chart 7

### Science in the newspapers **WEATHER REPORTS** 15 November 2001 - 15 May 2002



## Conclusions

The results of this study are not particularly surprising. Piero Angela said “they clearly and alarmingly confirm the impression that people get when reading newspapers or watching TV”. The purpose of this *Observatory* was to provide a reliable picture of science communication through the media in Italy. The plausible results which have been obtained may be interpreted as a confirmation of sample representativeness and adequacy.

These results were shown to some experts who collectively underscored the predominant role of biomedicine to the detriment of other scientific disciplines. A different aggregation of these data<sup>11</sup> allowed the assessing of the role of culture in science: it accounted for 32% of the total amount of scientific news in newspapers and for only 12% in TV news broadcasts. An encouraging aspect emerged from the qualitative analysis of these data carried out by some experts<sup>12</sup>: science communication highlights with increasing frequency the link between science and society. Regarding articles on climatic issues, for example, Franco Foresta Martin noted that:

*there is a constant increase in articles which deal with the consequences of climate change on man's health, ecosystems, agriculture, tourism, economy, civil defence, poverty, migrations and so on.*

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<sup>11</sup> It includes life sciences and hard sciences plus applied molecular biology (extracted from the field of biomedicine), history and philosophy of science.

<sup>12</sup> *Commenti all'Osservatorio permanente sulla comunicazione scientifica attraverso i media*, edited by ISAS/ILEGIS, forthcoming publication.